



---

**west virginia** department of environmental protection

---

Office of Oil and Gas  
601 57th Street SE  
Charleston, WV 25304  
(304) 926-0450  
(304) 926-0452 fax

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

December 12, 2013

**WELL WORK PERMIT**

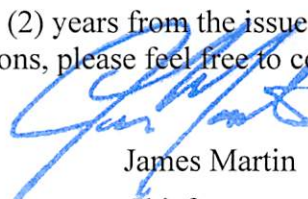
**Horizontal 6A Well**

This permit, API Well Number: 47-5101687, issued to NOBLE ENERGY, INC., is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin  
Chief

Operator's Well No: WEB22AHS  
Farm Name: TIM M. TURLEY AND TAMMY JE  
**API Well Number: 47-5101687**  
**Permit Type: Horizontal 6A Well**  
Date Issued: 12/12/2013

**Promoting a healthy environment.**

## PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

---

### CONDITIONS

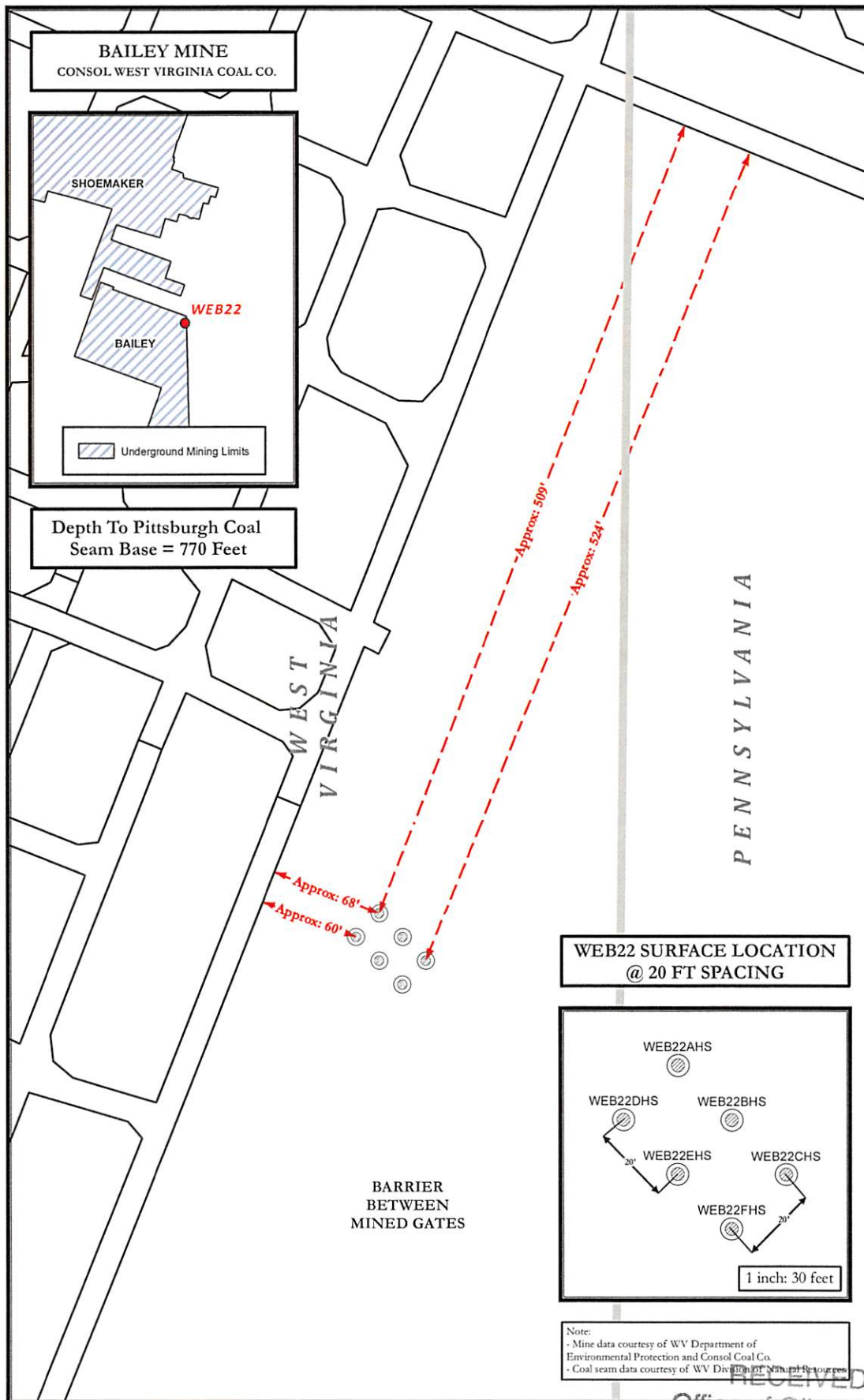
---

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

51-01687

Copyright 2010 ESRI. All rights reserved. Printed on Thu Jun 6 2013 09:58:14 AM

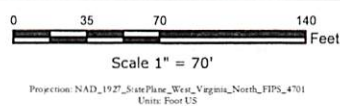
WV Department of  
Environmental Protection



**WEB22 SITE SAFETY PLAN**  
- WELLHEAD TOPHOLE LOCATION -

Surface Hole Locations

Underground Mining Limits



**noble energy**

Disclaimer: All data is licensed for use by Noble Energy Inc. use only.

Date: 6/5/2013

5

6



WW - 6B  
(3/13)

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
WELL WORK PERMIT APPLICATION

- 1) Well Operator: Noble Energy, Inc. 494501907 Marshall Webster Majorsville  
Operator ID County District Quadrangle
- 2) Operator's Well Number: WEB 22 AHS Well Pad Name: WEB 22
- 3 Elevation, current ground: 1325' Elevation, proposed post-construction: 1340.25'
- 4) Well Type: (a) Gas ☒ Oil ☐ Underground Storage ☐  
Other ☐  
(b) If Gas: Shallow ☒ Deep ☐  
Horizontal ☒
- 5) Existing Pad? Yes or No: No
- 6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):  
Target-Marcellus, Depth-6875', Thickness-48', Pressure-4569#
- 7) Proposed Total Vertical Depth: 6913'
- 8) Formation at Total Vertical Depth: Marcellus
- 9) Proposed Total Measured Depth: 14,938'
- 10) Approximate Fresh Water Strata Depths: 212', 295'
- 11) Method to Determine Fresh Water Depth: Offset Well Data
- 12) Approximate Saltwater Depths: None noted on Offsets
- 13) Approximate Coal Seam Depths: 761' to 771' Pittsburgh
- 14) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated, drilling in solid block-see mine maps
- 15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: Near Bailey Mine at approx 770' Depth
- 16) Describe proposed well work: Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6,913 feet.  
Drill Horizontal leg - stimulate and produce the Marcellus Formation.  
If we should encounter an unanticipated void we will install casing at a minimum of 20' below the void but not more than 100' below the void, set a basket and grout to surface.
- 17) Describe fracturing/stimulating methods in detail:  
The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. See attached list.
- 18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 18.5 acres
- 19) Area to be disturbed for well pad only, less access road (acres): 8.45 acres

RECEIVED  
Office of Oil and Gas

DEC 10 2013

MA  
Environmental

WW - 6B  
(3/13)

20)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill -up (Cu. Ft.)</u>
Conductor	30"	N	LS	117#	40'	40'	CTS
Fresh Water	20"	N	LS	94#	400'	400'	CTS
Coal	13 3/8"	N	J-55	54.5#	1220'	1220'	CTS
Intermediate	9 5/8"	N	J-55	36#	3356'	3356'	CTS
Production	5 1/2"	N	P110	20#	14,938'	14,938'	TOC 200' above 9.62 shoe
Tubing							
Liners							

<b>TYPE</b>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
Conductor	30"	36"	0.375		Type 1/Class A	1.2
Fresh Water	20"	26"	.438	2110	Type 1/Class A	1.2
Coal	13 3/8"	17 1/2"	.380	2730	Type 1/Class A	1.2
Intermediate	9 5/8"	12 3/8"	.352	3520	Type 1/Class A	1.19
Production	5 1/2"	8 3/4" & 8 1/2"	.361	12,640	Type 1/Class A	1.27
Tubing						
Liners						

**PACKERS**

Kind:			
Sizes:			
Depths Set:			

RECEIVED  
Office of Oil and Gas  
SEP 25 2013

WW-6B  
(9/13)

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill the vertical depth to the Marcellus at an estimated total vertical depth of approximately 6,913 feet. Drill Horizontal leg - stimulate and produce the Marcellus Formation. If we should encounter an unanticipated void we will install casing at a minimum of 20' below the void but not more than 100' below the void, set a basket and grout to surface.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals. See attached list. Maximum pressure not to exceed 10,000 lb.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.5

22) Area to be disturbed for well pad only, less access road (acres): 8.45

23) Describe centralizer placement for each casing string:

No centralizers will be used with conductor casing. Surface casing will have bow spring centralizers on first 2 joints then every third joint to 100' from surface. Intermediate casing will have bow spring centralizers on first 2 joints then every third joint to 100' from surface. Production string will have a rigid bow spring every joint to KOP, rigid bow spring every third joint from KOP to top of cement.

24) Describe all cement additives associated with each cement type:

Conductor-1.15% CaCl \*Surface and Coal (Intermediate)- Class A Portland Cement CaCl 2%, 2% Accelerator, 0.2% Antifoam and 0.125#/sk Flake. Excess Yield=1.18 Production- 14.8 ppg class A 25:75:0 System +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer 15% Excess Yield=1.27 TOC greater or equal to 200' above 9.625" shoe.

\*Surface and Coal string WVDEP approved variance attached.

25) Proposed borehole conditioning procedures:

Conductor-The hole is drilled w/air and casing is run on air. Apart from insuring the hole is clean via air circulation at TD, there are no other conditioning procedures. Surface-The hole is drilled w/air and casing is run on air. Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement Coal-The hole is drilled and cased w/air or on Freshwater based mud. Once casing is at setting depth, the hole is filled w/KCl water and a minimum of one hole volume is circulated prior to pumping cement. Intermediate-Once surface casing is set and cemented, intermediate hole is drilled either on air or SOBM and filled with KCl water once drilled to TD. Production-The hole is drilled with SOBM and once to TD, circulated at maximum allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.


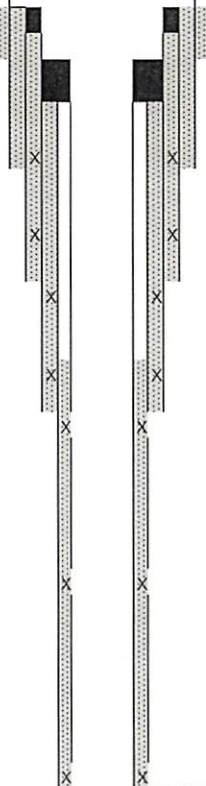
\*Note: Attach additional sheets as needed.

DEC 19 2013





**DRILLING WELL PLAN**  
**WEB-22A-HS (Marcellus HZ)**  
**Macellus Shale Horizontal**  
**Marshall County, WV**

					<div>DRILLING WELL PLAN</div> <div>WEB-22A-HS (Marcellus HZ)</div> <div>Macellus Shale Horizontal</div> <div>Marshall County, WV</div>																
			WEB-22A SHL (Lat/Long)				(519852.69N, 1713925.73E) (NAD27)														
Ground Elevation		1325'		WEB-22A LP (Lat/Long)				(519973.61N, 1713258.63E) (NAD27)													
Azm		325°		WEB-22A BHL (Lat/Long)				(526176.75N, 1708915.14E) (NAD27)													
WELLBORE DIAGRAM											HOLE	CASING	GEOLOGY	MD	TVD	MUD	CEMENT	CENTRALIZERS	CONDITIONING	COMMENTS	
											36	30" 117#				AIR	To Surface	N/A	Ensure the hole is clean at TD.	Stabilize surface fill/soil. Conductor casing = 0.375" wall thickness	
												Conductor		40	40						
												24	20" 94#				AIR	15.6 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Centralized every 3 joints to surface	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Surface casing = 0.438" wall thickness Burst=2730 psi
												Surface Casing		400	400						
												17 1/2	13-3/8" 54.5# J-55 BTC				AIR	15.6 ppg Type 1 + 2% CaCl, 0.25# Lost Circ 30% Excess Yield = 1.18	Bow Spring on first 2 joints then every third joint to 100' form surface	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Intermediate casing = 0.380" wall thickness Burst=2730 psi
												Pittsburgh Coal		761	761						
													Int. Casing		871	871					
												12 3/8	9-5/8" 36# J-55 LTC				AIR	15.6ppg Class A +0.4% Ret, 0.15% Disp, 0.2% AntiFoam, 0.125#/sk Lost Circ 20% Excess Yield=1.19 To Surface	Bow spring centralizers every third joint to 100' feet from surface.	Fill with KCl water once drilled to TD. Once casing is at setting depth, circulate a minimum of one hole volume prior to pumping cement.	Casing to be ran 250' below the 5th Sand. Intermediate casing = 0.352" wall thickness Burst=3520 psi
												Dunkard Sand		1405	1405						
												Big Lime		2007	2007						
												5th Sand Base		3106	3106						
													Int. Casing		3356	3356					
												8.75" Vertical					8.0ppg - 9.0ppg SOBM	14.8ppg Class A 25:75:0 System  +2.6% Cement extender, 0.7% Fluid Loss additive, 0.45% high temp retarder, 0.2% friction reducer  10% Excess Yield=1.27  TOC >= 200' above 9.625" shoe	Rigid Bow Spring every third joint from KOP to TOC		
													Warren Sand		4567						
													Java		5240						
													Angola		5456						
													Rhinestreet		6088						
												8.75" Curve	5-1/2" 20# HCP-110 TXP BTC				12.0ppg-12.5ppg SOBM		Rigid Bow Spring every joint to KOP	Once at TD, circulate at max allowable pump rate for at least 6x bottoms up. Once on bottom with casing, circulate a minimum of one hole volume prior to pumping cement.	Production casing = 0.361" wall thickness Burst=12640 psi Note:Actual centralizer schedules may be changed due to hole conditions
													Cashaqua		6523						
		Middlesex		6622																	
		West River		6654																	
		Burkett		6710																	
		Tully Limestone		6734																	
		Hamilton		6760																	
		Marcellus		6875																	
	8.75" - 8.5" Lateral					12.0ppg-12.5ppg SOBM															
		TD		14938	6913																
		Onondaga		6923																	
LP @ 6913' TVD / 7365' MD											8.75 / 8.5 Hole - Cemented Long String 5-1/2" 20# HCP-110 TXP BTC				+/-7573' ft Lateral				TD @ +/-6913' TVD +/-14938' MD		
X=centralizers																					

RECEIVED  
Office of Oil and Gas

SEP 25 2013

WV Department of  
Environmental Protection



WW-9  
(5/13)

Page 51 of DL687  
API Number 47 - 51 - DL687  
Operator's Well No. WEB 22 AHS

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Noble Energy, Inc. OP Code 494501907

Watershed (HUC 10) Dunkard Fork (HUC 10) Quadrangle Majorsville

Elevation 1314' County Marshall District Webster

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes X No       

Will a pit be used for drill cuttings? Yes        No X

If so, please describe anticipated pit waste: Closed Loop-No pit to be utilized

Will a synthetic liner be used in the pit? Yes        No        If so, what ml.?       

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number        )
- ☒ Reuse (at API Number TBD-Next anticipated well )
- ☒ Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain        )

Will closed loop system be used? Yes       

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air thru intermediate string, then SOBMM

-If oil based, what type? Synthetic, petroleum, etc. Synthetic

Additives to be used in drilling medium? Please see attached list

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc.       

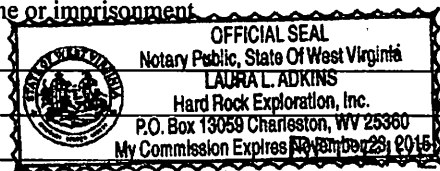
-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust)       

-Landfill or offsite name/permit number? Please see attached list

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Jessica Leska  
Company Official (Typed Name) Jessica Leska  
Company Official Title Regulatory Technician



Office of Oil and Gas

Subscribed and sworn before me this 30th day of August, 20 SEP 25 2013

Laura L. Adkins

My commission expires November 23, 2015

Notary Public  
WV Department of  
Environmental Protection

# Site Water/Cuttings Disposal

## Cuttings

### Haul off Company:

Eap Industries, Inc. DOT # 0876278  
1575 Smith Twp State Rd. Atlasburg PA 15004  
1-888-294-5227

### Disposal Locations:

Apex Environmental, LLC Permit # 06-08438  
11 County Road 78  
Amsterdam, OH 43903  
740-543-4389

Westmoreland Waste, LLC Permit # 100277  
111 Conner Lane  
Belle Vernon, PA 15012  
724-929-7694

Sycamore Landfill (Allied Waste) R30-07900105-2010  
4301 Sycamore Ridge Road  
Hurricane, WV 25526  
304-562-2611

## Water

### Haul off Company:

Dynamic Structures, Clear Creek DOT # 720485  
3790 State Route 7  
New Waterford, OH 44445  
330-892-0164

### Disposal Location:

Solidification  
Waste Management, Arden Landfill Permit # 100172  
200 Rangos Lane  
Washington, PA 15301  
724-225-1589

Solidification/Incineration  
Soil Remediation, Inc. Permit # 02-20753  
6065 Arrel-Smith Road  
Lowelville, OH 44436

RECEIVED  
Office of Oil and Gas  
SEP 25 2013  
WV Department of  
Environmental Protection

51-01687

Form WW-9

Operator's Well No. WEB 22 AHSNoble Energy, Inc.Proposed Revegetation Treatment: Acres Disturbed 18.5 acres Prevegetation pH \_\_\_\_\_Lime 2 to 3 Tons/acre or to correct to pH \_\_\_\_\_Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)Mulch hay or straw at 2 Tons/acre

Seed Mixtures

Seed Type	Area I lbs/acre
Tall Fescue	40
Ladino Clover	5

Alternative Seed Mixtures shown on Site Plan

Seed Type	Area II lbs/acre
Tall Fescue	40
Ladino Clover	5

Attach:

Drawing(s) of road, location, pit and proposed area for land application.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: \_\_\_\_\_

Comments: \_\_\_\_\_

Title: Inspector/ManagerDate: 9/19/13

Field Reviewed?

( ☒ ) Yes( ☐ ) No

*GCS for WKH*  
 RECEIVED  
 Office of Oil and Gas  
 SEP 25 2013

WV Department of  
 Environmental Protection



## Water Management Plan: Primary Water Sources



WMP-01586

API/ID Number:

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

**Important:**

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

**DEP is aware that some intake points will be used for multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.**

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at [DEP.water.use@wv.gov](mailto:DEP.water.use@wv.gov).

**APPROVED NOV 20 2013**



### Source Summary

WMP-01586

API Number:

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

## Stream/River

● Source **Wheeling Creek Pump Station 1 @ CNX Land Resources** Marshall Owner: **Consol Energy**

Start Date

End Date

Total Volume (gal)

Max. daily purchase (gal)

Intake Latitude:

Intake Longitude:

10/14/2013

10/14/2014

11,000,000

39.95205

-80.56189

☐ Regulated Stream?

Ref. Gauge ID:

3111955

Wheeling Creek near Majorsville, WV

Max. Pump rate (gpm):

1,000

Min. Gauge Reading (cfs):

18.23

Min. Passby (cfs)

16.63

DEP Comments:

● Source **Wheeling Creek Pump Station 2 @ CNX Land Resources** Marshall Owner: **CNX Land Resources, Inc.**

Start Date

End Date

Total Volume (gal)

Max. daily purchase (gal)

Intake Latitude:

Intake Longitude:

10/14/2013

10/14/2014

11,000,000

39.949578

-80.531256

☐ Regulated Stream?

Ref. Gauge ID:

3111955

Wheeling Creek near Majorsville, WV

Max. Pump rate (gpm):

1,000

Min. Gauge Reading (cfs):

18.23

Min. Passby (cfs)

16.24

DEP Comments:

## Source Summary

WMP-01586

API Number:

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

## Purchased Water

● Source **West Virginia American Water - Weston Water Treatme** Lewis Owner: **West Virginia American Water**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000	500,000	-	-

☒ Regulated Stream? Stonewall Jackson Dam Ref. Gauge ID: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **170.57** Min. Passby (cfs)

DEP Comments:

● Source **Bethlehem Water Department** Ohio Owner: **Bethlehem Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000	200,000	-	-

☒ Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Bethlehem Water Department purchases all its water from the City of Wheeling. Thresholds are set based on the location of the City of Wheeling's raw water intake.

● Source **Wellsburg Water Department** Brooke Owner: **Wellsburg Water Department**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000	200,000	-	-

☒ Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

Source	<b>Moundsville Water Board</b>		Marshall	Owner:	<b>Moundsville Water Treatment Plant</b>	
Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:	
10/14/2013	10/14/2014	11,000,000	2,000,000	-	-	
<input checked="" type="checkbox"/> Regulated Stream? <b>Ohio River Min. Flow</b> Ref. Gauge ID:    9999999    Ohio River Station: Willow Island Lock & Dam						
Max. Pump rate (gpm):		Min. Gauge Reading (cfs):		6,468.00		Min. Passby (cfs)
DEP Comments:    This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <a href="http://www.erh.noaa.gov/er/ohrfc/flows.shtml">http://www.erh.noaa.gov/er/ohrfc/flows.shtml</a>						

Source	<b>Dean's Water Service</b>		Ohio	Owner:	<b>Dean's Water Service</b>	
Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:	
10/14/2013	10/14/2014	11,000,000	600,000	-	-	
<input checked="" type="checkbox"/> Regulated Stream? <b>Ohio River Min. Flow</b> Ref. Gauge ID:    9999999    Ohio River Station: Willow Island Lock & Dam						
Max. Pump rate (gpm):		Min. Gauge Reading (cfs):		6,468.00		Min. Passby (cfs)
DEP Comments:						

Source	<b>Wheeling Water Department</b>		Ohio	Owner:	<b>Wheeling Water Department</b>	
Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:	
10/14/2013	10/14/2014	11,000,000	17,500	-	-	
<input checked="" type="checkbox"/> Regulated Stream? <b>Ohio River Min. Flow</b> Ref. Gauge ID:    9999999    Ohio River Station: Willow Island Lock & Dam						
Max. Pump rate (gpm):		Min. Gauge Reading (cfs):		6,468.00		Min. Passby (cfs)
DEP Comments:    Refer to the specified sation on the National Weather Service's Ohio River forecasts at the following website: <a href="http://www.erh.noaa.gov/ohrfc//flows.shtml">http://www.erh.noaa.gov/ohrfc//flows.shtml</a>						

Source **Ohio County PSD** Ohio Owner: **Ohio county PSD**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000	720,000	-	-

☒ Regulated Stream? **Ohio River Min. Flow** Ref. Gauge ID: **9999999** **Ohio River Station: Willow Island Lock & Dam**

Max. Pump rate (gpm): Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: **Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>**



## Source Summary

WMP-01586

API Number:

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

## Ground Water

● Source Shoemaker Groundwater Well #3 Marshall Owner: Consol Energy

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000		40.0222	-80.73389

☒ Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): 800 Min. Gauge Reading (cfs): 6,468.00 Min. Passby (cfs)

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

● Source Shoemaker Groundwater Well #4 Marshall Owner: Consol Energy

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000		40.022293	-80.733586

☒ Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): 800 Min. Gauge Reading (cfs): 6,468.00 Min. Passby (cfs)

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

● Source Shoemaker Groundwater Well #5 Marshall Owner: Consol Energy

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000		40.021256	-80.734568

☒ Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): 800 Min. Gauge Reading (cfs): 6,468.00 Min. Passby (cfs)

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

Source Shoemaker Groundwater Well #6 Marshall Owner: Consol Energy

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
10/14/2013	10/14/2014	11,000,000		40.02076	-80.73397

☒ Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): 800 Min. Gauge Reading (cfs): 6,468.00 Min. Passby (cfs)

DEP Comments: This alluvial groundwater well is, to some extent, under the influence of the Ohio River. Please adhere to stated minimum flow requirements on the Ohio River for withdrawals. <http://www.erh.noaa.gov/er/ohrfc/flows.shtml>

## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

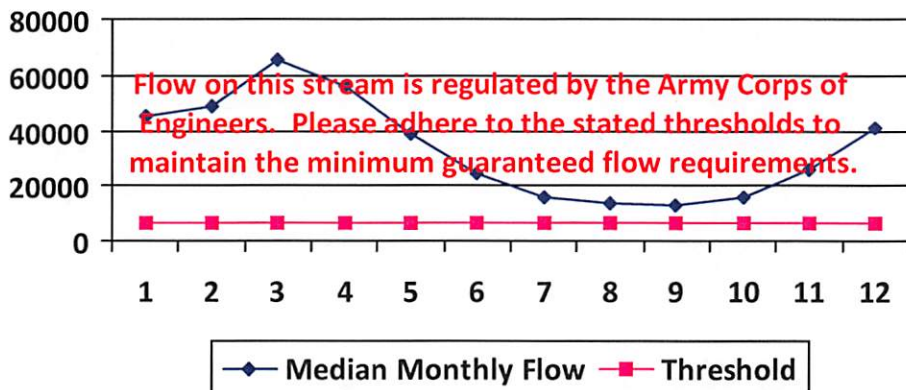
Source ID: 30022	Source Name: Shoemaker Groundwater Well #3 Consol Energy	Source Latitude: 40.0222 Source Longitude: -80.73389
HUC-8 Code: 5030106	Drainage Area (sq. mi.): 25000 County: Marshall	Anticipated withdrawal start date: 10/14/2013 Anticipated withdrawal end date: 10/14/2014
<input type="checkbox"/> Endangered Species? <input type="checkbox"/> Trout Stream? <input checked="" type="checkbox"/> Regulated Stream? <input type="checkbox"/> Proximate PSD? <input checked="" type="checkbox"/> Gauged Stream?	<input checked="" type="checkbox"/> Mussel Stream? <input type="checkbox"/> Tier 3? Ohio River Min. Flow	Total Volume from Source (gal): 11,000,000 Max. Pump rate (gpm): 800 Max. Simultaneous Trucks: Max. Truck pump rate (gpm):

Reference Gaug 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.) 25,000.00 Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	1.78
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

Source ID: 30023 Source Name: Shoemaker Groundwater Well #4

Source Latitude: 40.022293

Consol Energy

Source Longitude: -80.733586

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Marshall

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☐ Proximate PSD?

☒ Gauged Stream?

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

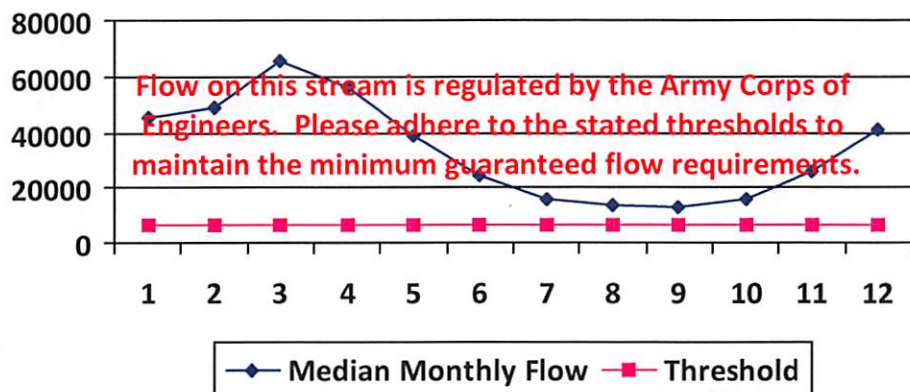
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs): 1.78

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

Source ID: 30024 Source Name: Shoemaker Groundwater Well #5

Source Latitude: 40.021256

Consol Energy

Source Longitude: -80.734568

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000

County: Marshall

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

☐ Endangered Species? ☐ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm): 800

☐ Proximate PSD?

Max. Simultaneous Trucks:

☒ Gauged Stream?

Max. Truck pump rate (gpm)

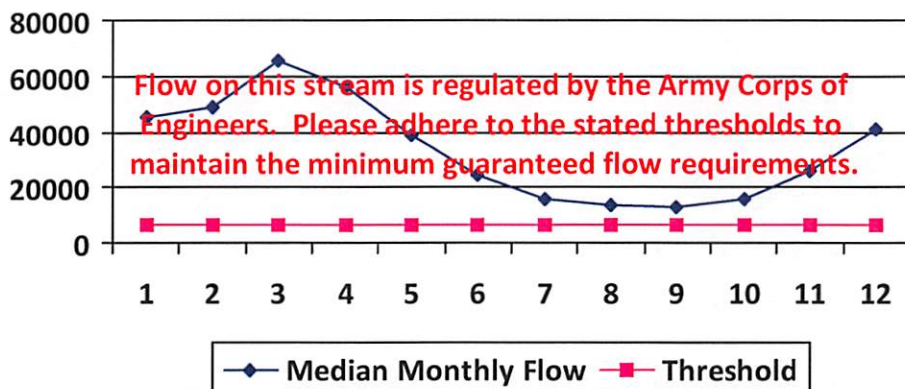
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs): 1.78

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Source Detail

WMP- 01586

API/ID Number:

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

Source ID: 30025

Source Name Shoemaker Groundwater Well #6

Source Latitude: 40.02076

Consol Energy

Source Longitude: -80.73397

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000

County: Marshall

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm): 800

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☐ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☐ Proximate PSD?

☒ Gauged Stream?

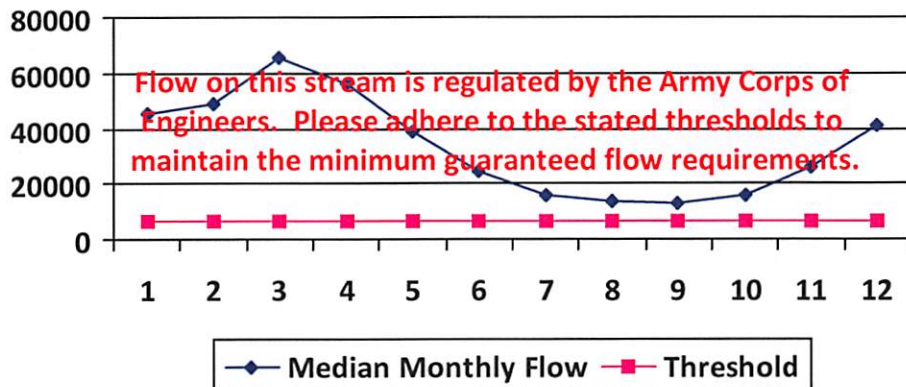
Reference Gaug 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs): 1.78

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30026 Source Name: West Virginia American Water - Weston Water Treat  
West Virginia American Water

Source Latitude: -  
Source Longitude: -

HUC-8 Code: 5020002

Drainage Area (sq. mi.): 104.83 County: Lewis

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Stonewall Jackson Dam

☒ Proximate PSD? Weston WTP

☒ Gauged Stream?

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

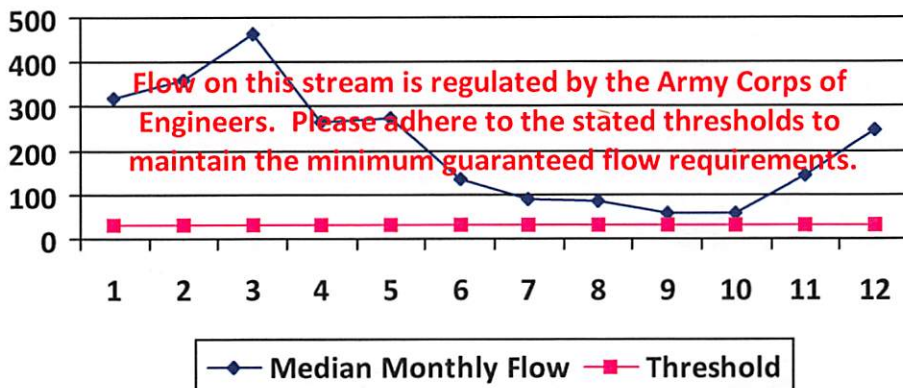
Reference Gaug: 3061000 WEST FORK RIVER AT ENTERPRISE, WV

Drainage Area (sq. mi.): 759.00

Gauge Threshold (cfs): 234

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	321.23	-	-
2	361.67	-	-
3	465.85	-	-
4	266.43	-	-
5	273.47	-	-
6	137.03	-	-
7	88.78	-	-
8	84.77	-	-
9	58.98	-	-
10	57.83	-	-
11	145.12	-	-
12	247.76	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs): 24.32

Downstream Demand (cfs): 0.00

Pump rate (cfs):

Headwater Safety (cfs): 8.08

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

Source ID: 30027 Source Name: Bethlehem Water Department  
Bethlehem Water Department

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☒ Proximate PSD? City of Wheeling

☒ Gauged Stream?

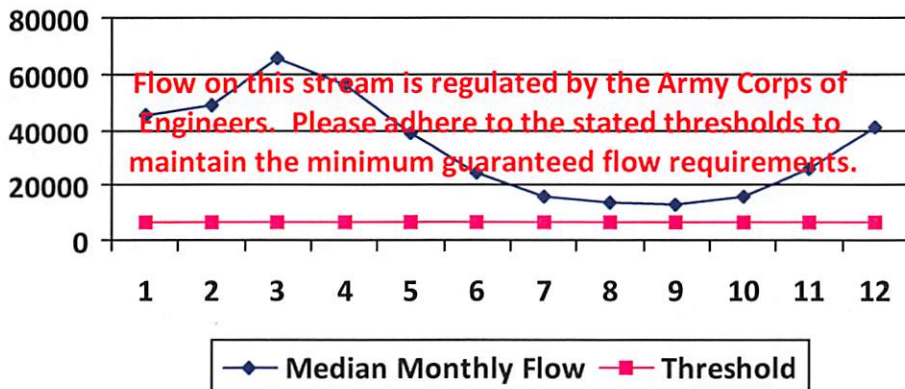
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30028 Source Name: Wellsburg Water Department  
Wellsburg Water Department

Source Latitude: -  
Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Brooke

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☒ Proximate PSD? Wellsburg Water Department

☒ Gauged Stream?

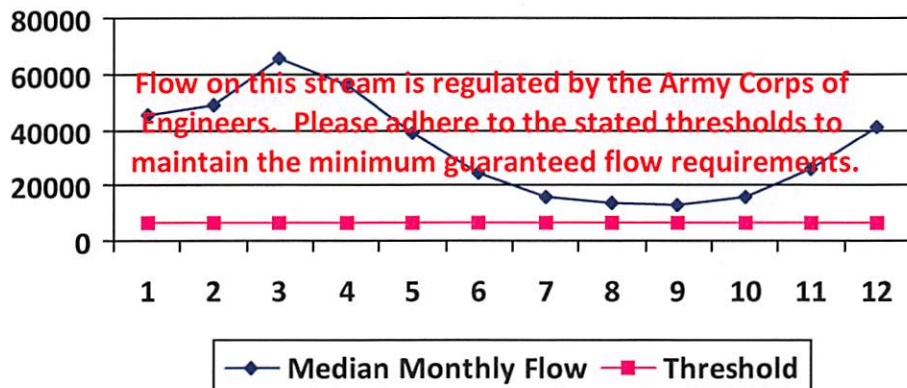
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30029 Source Name: Moundsville Water Board  
Moundsville Water Treatment Plant

Source Latitude: -  
Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Marshall

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☐ Proximate PSD?

☒ Gauged Stream?

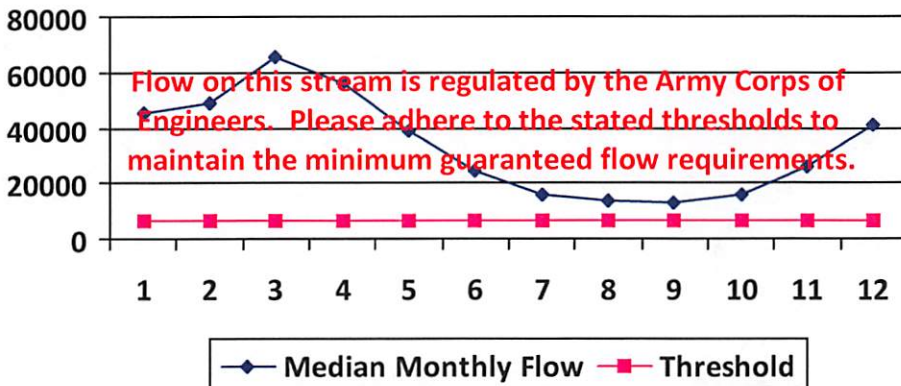
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

## Source Detail

WMP- 01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30030 Source Name: Dean's Water Service  
Dean's Water Service

Source Latitude: -  
Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☐ Proximate PSD?

☒ Gauged Stream?

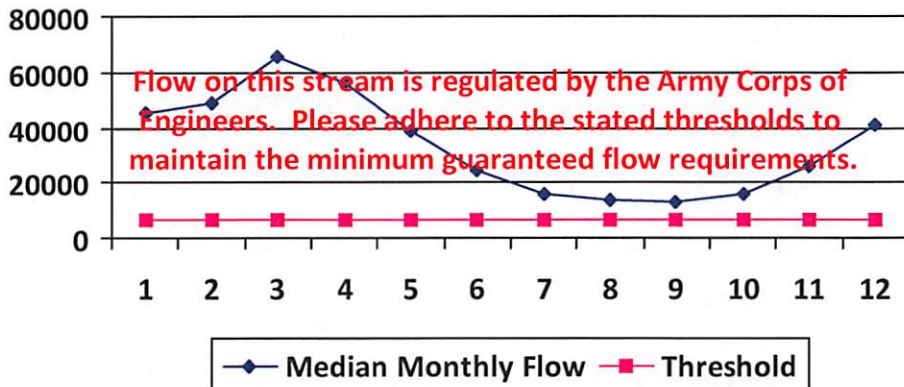
Reference Gaug 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Source Detail

WMP- 01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30032 Source Name: Wheeling Water Department  
Wheeling Water Department

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☒ Proximate PSD? Wheeling Water Department

☒ Gauged Stream?

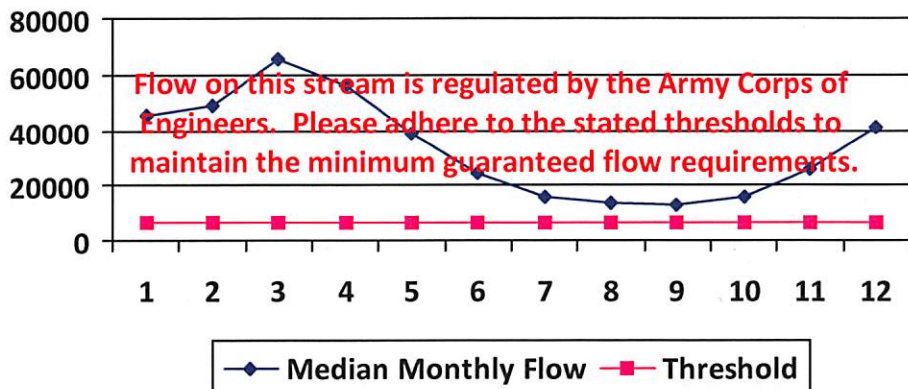
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

## Source Detail

WMP- 01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30033 Source Name Ohio County PSD  
Ohio county PSD

Source Latitude: -

Source Longitude: -

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 25000 County: Ohio

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm):

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☒ Regulated Stream? Ohio River Min. Flow

☒ Proximate PSD? Wheeling Water Department

☒ Gauged Stream?

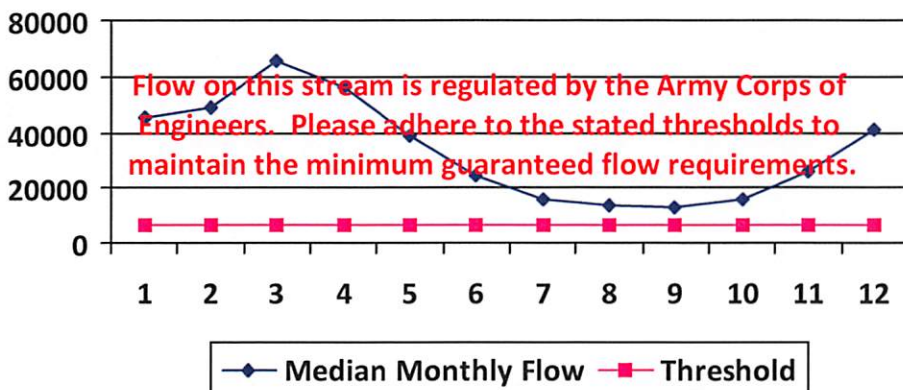
Reference Gaug 9999999 Ohio River Station: Willow Island Lock &amp; Dam

Drainage Area (sq. mi.) 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

### Water Availability Profile



### Water Availability Assessment of Location

Base Threshold (cfs): -

Upstream Demand (cfs):

Downstream Demand (cfs):

Pump rate (cfs):

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): -

Passby at Location (cfs): -

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30020 Source Name: Wheeling Creek Pump Station 1 @ CNX Land Resour  
Consol Energy

Source Latitude: 39.95205  
Source Longitude: -80.56189

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 156.06 County: Marshall

- ☐ Endangered Species? ☒ Mussel Stream?  
☐ Trout Stream? ☐ Tier 3?  
☐ Regulated Stream?  
☐ Proximate PSD?  
☒ Gauged Stream?

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm): 1,000

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm)

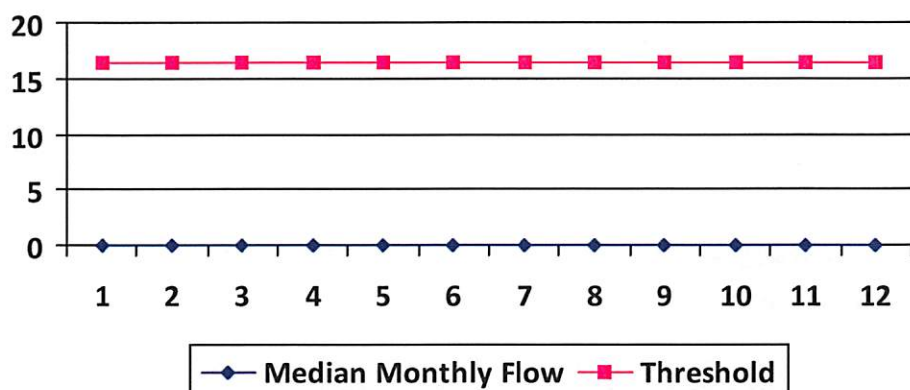
Reference Gaug: 311955 Wheeling Creek near Majorsville, WV

Drainage Area (sq. mi.): 152.00

Gauge Threshold (cfs): 16

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	0.00	18.66	-
2	0.00	18.66	-
3	0.00	18.66	-
4	0.00	18.66	-
5	0.00	18.66	-
6	0.00	18.66	-
7	0.00	18.66	-
8	0.00	18.66	-
9	0.00	18.66	-
10	0.00	18.66	-
11	0.00	18.66	-
12	0.00	18.66	-

## Water Availability Profile



## Water Availability Assessment of Location

Base Threshold (cfs): 16.43

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs): 2.23

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): 18.23

Passby at Location (cfs): 16.43

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

## Source Detail

WMP-01586

API/ID Number: 047-051-01687

Operator: Noble Energy, Inc

WEB22AHS

Source ID: 30021 Source Name: Wheeling Creek Pump Station 2 @ CNX Land Resources, Inc.

Source Latitude: 39.949578

Source Longitude: -80.531256

HUC-8 Code: 5030106

Drainage Area (sq. mi.): 152.4 County: Marshall

Anticipated withdrawal start date: 10/14/2013

Anticipated withdrawal end date: 10/14/2014

Total Volume from Source (gal): 11,000,000

Max. Pump rate (gpm): 1,000

Max. Simultaneous Trucks: 0

Max. Truck pump rate (gpm):

☐ Endangered Species? ☒ Mussel Stream?

☐ Trout Stream? ☐ Tier 3?

☐ Regulated Stream?

☐ Proximate PSD?

☒ Gauged Stream?

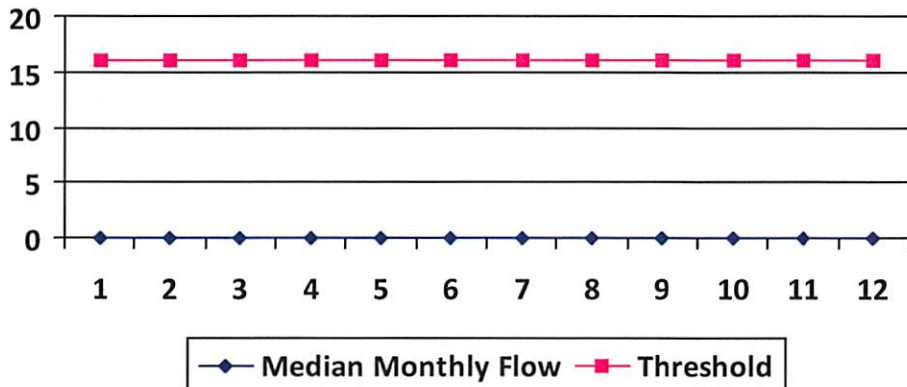
Reference Gaug: 3111955 Wheeling Creek near Majorsville, WV

Drainage Area (sq. mi.): 152.00

Gauge Threshold (cfs): 16

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	0.00	18.27	-
2	0.00	18.27	-
3	0.00	18.27	-
4	0.00	18.27	-
5	0.00	18.27	-
6	0.00	18.27	-
7	0.00	18.27	-
8	0.00	18.27	-
9	0.00	18.27	-
10	0.00	18.27	-
11	0.00	18.27	-
12	0.00	18.27	-

## Water Availability Profile



## Water Availability Assessment of Location

Base Threshold (cfs): 16.04

Upstream Demand (cfs): 0.00

Downstream Demand (cfs): 0.00

Pump rate (cfs): 2.23

Headwater Safety (cfs): 0.00

Ungauged Stream Safety (cfs): 0.00

Min. Gauge Reading (cfs): 18.23

Passby at Location (cfs): 16.04

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.



## Water Management Plan: Secondary Water Sources



WMP- 01586

API/ID Number

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

### Multi-site impoundment

Source ID:	30034	Source Name	SHL #1 Centralized Freshwater Impoundment		Source start date:	10/14/2013
					Source end date:	10/14/2014
Source Lat:	39.979696	Source Long:	-80.579465	County	Marshall	
Max. Daily Purchase (gal)		Total Volume from Source (gal):	11,000,000			
DEP Comments:						

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-200



**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
  - For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.
- 

Source ID:	30035	Source Name	SHL #2 Centralized Waste Pit	Source start date:	10/14/2013	
				Source end date:	10/14/2014	
	Source Lat:	39.966973	Source Long:	-80.561377	County	Marshall
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	11,000,000		
DEP Comments:	WV51-WPC-00001					

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-201

Source ID:	30036	Source Name	SHL #3 Centralized Waste Pit	Source start date:	10/14/2013	
				Source end date:	10/14/2014	
	Source Lat:	39.974133	Source Long:	-80.55527	County	Marshall
	Max. Daily Purchase (gal)		Total Volume from Source (gal):	11,000,000		
DEP Comments:	WV51-WPC-00002					

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-202



WMP-01586

API/ID Number

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Source ID:	30037	Source Name	SHL #4 Centralized Waste Pit		Source start date:	10/14/2013
					Source end date:	10/14/2014
Source Lat:	39.963284	Source Long:	-80.562743	County	Marshall	
Max. Daily Purchase (gal)		Total Volume from Source (gal):	11,000,000			
DEP Comments:	WV51-WPC-00003					

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

**Reference: WMP-204****Purchased Water**

Source ID:	30031	Source Name	Bridgeport Ohio Water Department Public Water Provider		Source start date:	10/14/2013
					Source end date:	10/14/2014
Source Lat:	40.08348	Source Long:	-80.736488	County		
Max. Daily Purchase (gal)	200,000	Total Volume from Source (gal):	11,000,000			
DEP Comments:	Please ensure that purchases from this source are approved by, and completed in accordance with, requirements set forth by the State of Ohio Department of Environmental Protection.					

WMP- 01586

API/ID Number

047-051-01687

Operator:

Noble Energy, Inc

WEB22AHS

**Important:**

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

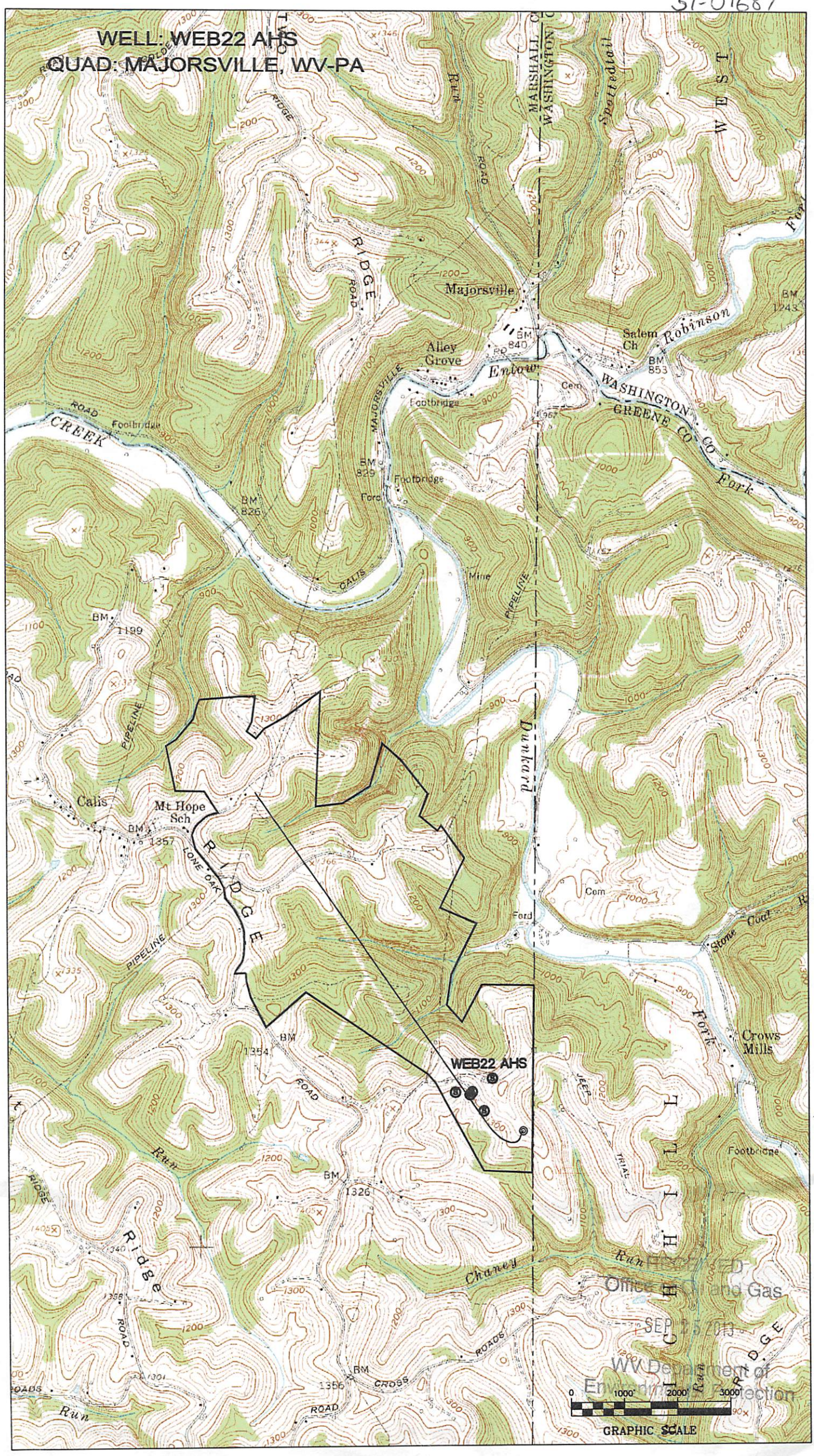
- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

**Recycled Frac Water**

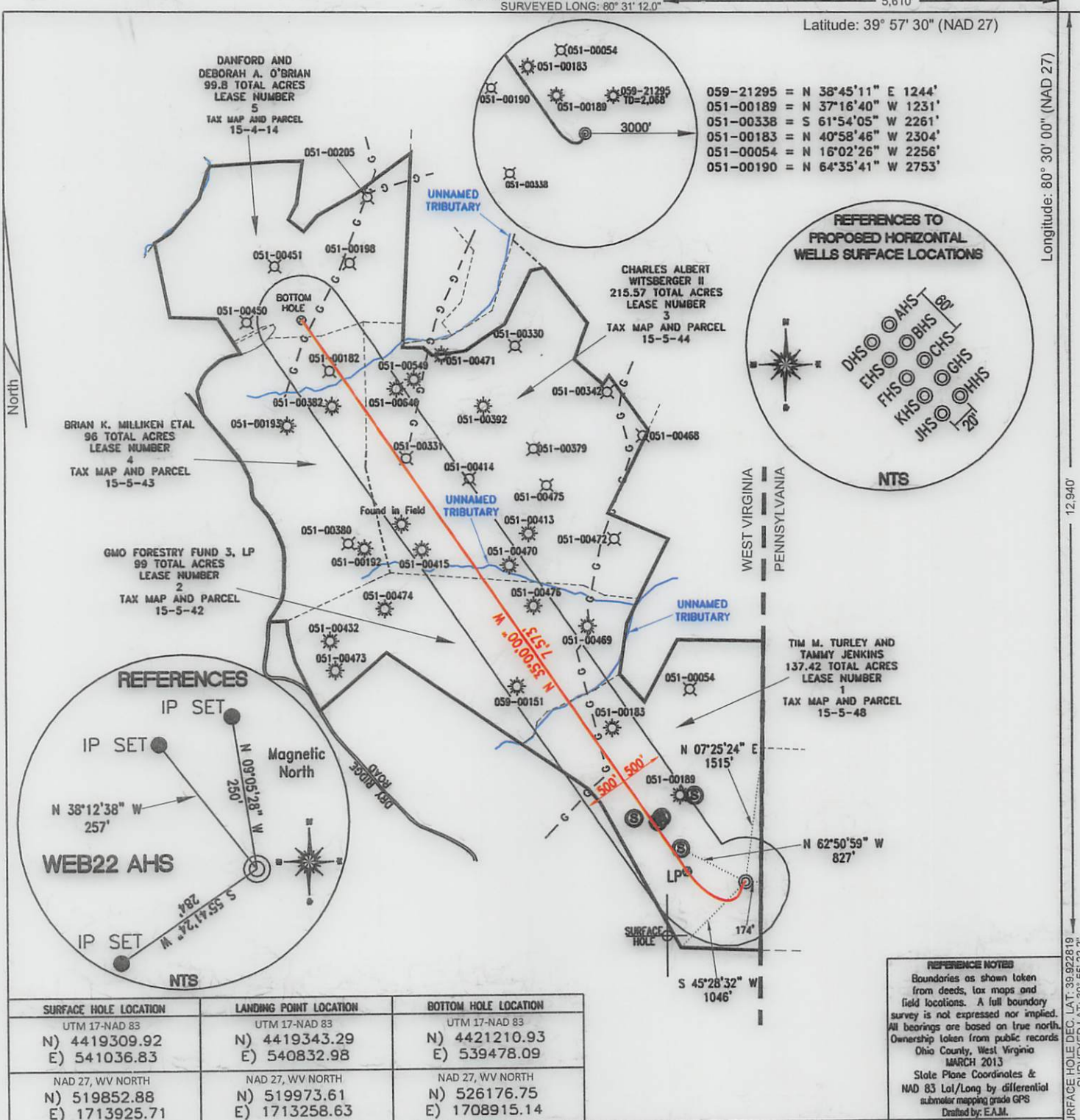
Source ID:	30038	Source Name	Various		Source start date:	10/14/2013
					Source end date:	10/14/2014
		Source Lat:		Source Long:		County
		Max. Daily Purchase (gal)		Total Volume from Source (gal):	11,000,000	
DEP Comments:	Sources include, but are not limited to, the SHL17, SHL23, and WEB13 well pads.					



WELL: WEB22 AHS  
QUAD: MAJORSVILLE, WV-PA



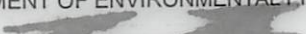




SURFACE HOLE DEC. LAT: 39.922819 .  
CLIP/EVE/CLAT: 30.5522 2"

SURFACE HOLE LOCATION	LANDING POINT LOCATION	BOTTOM HOLE LOCATION
UTM 17-NAD 83 N) 4419309.92 E) 541036.83	UTM 17-NAD 83 N) 4419343.29 E) 540832.98	UTM 17-NAD 83 N) 4421210.93 E) 539478.09
NAD 27, WV NORTH N) 519852.88 E) 1713925.71	NAD 27, WV NORTH N) 519973.61 E) 1713258.63	NAD 27, WV NORTH N) 526176.75 E) 1708915.14

**REFERENCE NOTES**  
Boundaries as shown taken  
from deeds, tax maps and  
field locations. A full boundary  
survey is not expressed nor implied.  
All bearings are based on true north.  
Ownership taken from public records  
Ohio County, West Virginia  
MARCH 2013  
State Plane Coordinates &  
NAD 83 Lat/Long by differential  
submeter mapping grade GPS  
Drafted by: E.A.M.

FILE #:	NOB 001	I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION. Signed:  L.L.S. #2124 : Ernest J. Benchek III
DRAWING #:	2168	
SCALE:	PLAT - 1"=1600' TICK MARK - 1"=2000'	
MINIMUM DEGREE OF ACCURACY:	1/200	
PROVEN SOURCE OF ELEVATION:	SUBMETER MAPPING GRADE GPS	

(+) DENOTES LOCATION OF WELL ON  
UNITED STATES TOPOGRAPHIC MAPS  
WYDEP

**OFFICE OF OIL & GAS**  
601 57TH STREET  
CHARLESTON, WV 25304

Well Type: ☐ Oil ☐ Waste Diposal ☒ Production ☐ Deep  
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: WHEELING CREEK - Dunkard Fork HUCB

COUNTY/DISTRICT: MARSHALL / WEBSTER

**SURFACE OWNER:** TIM M. TURLEY AND TAMMY JENKINS

OIL & GAS ROYALTY OWNER: TIM M. TURLEY AND TAMMY JENKINS

LEASE NUMBERS:

DRILL ☒ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒  
 PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON ☐  
 CLEAN OUT & REPLUG ☐ OTHER CHANGE ☐ (SPECIFY): \_\_\_\_\_

TARGET FORMATION: MARCELLUS

WELL OPERATOR: NOBLE ENERGY, INC.

ADDRESS: 333 TECHNOLOGY DRIVE SUITE 116

CITY: CANONSBURG STATE: PA ZIP CODE: 15317

ESTIMATED DEPTH:                      TVD: 6,913' TMD: 14,938'

DESIGNATED AGENT: STEVEN M. GREEN

ADDRESS: 500 VIRGINIA STREET EAST

CITY: CHARLESTON

DATE: AUGUST 21, 2013

OPERATOR'S WELL #: WEB22 AHS

API WELL #: 47 51 01687 H6A  
STATE COUNTY PERMIT

ELEVATION: 1,325'

QUADRANGLE: MAJORSVILLE WV-PA

ACREAGE: 137.42 +/-

ACREAGE: 647.79 +/-

PULL ☐ FRACTURE OR STIMULATE ☒